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Biosynthesis of secreted ribonucleases of Bacillus intermedius and Bacillus circulans under nitrogen starvation

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Abstract

The level of biosynthesis of secreted guanyl-specific ribonucleases (RNases) of Bacillus intermedius (binases) and Bacillus circulans (RNases Bci) by recombinant B. subtilis strains increases under nitrogen starvation. The promoter of the binase gene carries the sequences homologous to the recognition sites of the regulatory protein TnrA, which regulates gene expression under growth limitation by nitrogen. Using the B. subtilis strain defective in protein TnrA, it has been shown that the regulatory protein TnrA is involved in the regulation of expression of the binase gene and the gene of RNase Bci. The TnrA regulation of expression of the RNase Bci gene is indirect, probably by means of the regulatory protein PucR. Thus, it has been established that at least two regulatory mechanisms activate the expression of the genes encoding the secreted RNases of spore-forming bacteria: a system of proteins homologous to the B. subtilis PhoP-PhoR, and regulation by a protein similar to the B. subtilis TnrA regulatory protein.

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Keywords

Bacilli, Binase, Biosynthesis regulation, RNase Bci